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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/587,163

07/26/2006

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EXAMINER

GARDNER, SHANNON M

ART UNIT

PAPER NUMBER

1795

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DELIVERY MODE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/587,163	<b>Applicant(s)</b> KUBO ET AL.	
	<b>Examiner</b> Shannon Gardner	<b>Art Unit</b> 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 17 April 2009 (Response to Restriction).
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) 11-13 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>7/26/2006</u> .   | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Claims 11-13 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected Group II, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 4/17/2009. Applicant's amendment to claim 11 does not make rejoinder proper and the Restriction is maintained.

### ***Information Disclosure Statement***

2. The information disclosure statement filed 7/26/2006 fails to comply with the provisions of 37 CFR 1.97, 1.98 and MPEP § 609 because Applicant has not provided English equivalents and/or English abstracts for the foreign patents of this IDS. It has been placed in the application file, but the information referred to therein has not been considered as to the merits. Applicant is advised that the date of any re-submission of any item of information contained in this information disclosure statement or the submission of any missing element(s) will be the date of submission for purposes of determining compliance with the requirements based on the time of filing the statement, including all certification requirements for statements under 37 CFR 1.97(e). See MPEP § 609.05(a).

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Art Unit: 1795

4. Claims 4-5 and 7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 4-5, it is unclear as to what kind of "treatment" Applicant is referring in the 4<sup>th</sup> and 3<sup>rd</sup> lines of each claim, respectively. The Examiner suggests amending "treatment" to read "heating". Appropriate correction is required.

Regarding claim 7, the 2<sup>nd</sup> line of the claim recites the limitation "the readily adhesive layer". There is insufficient antecedent basis for this limitation in the claim. The Examiner suggests making claim 7 dependent on claim 6 and the claim will be treated as such for the purposes of this action. Appropriate correction is required.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Art Unit: 1795

7. Claims 1-4 and 9-10 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Abe et al. (JP 2002-050413, machine translation provided).

As to claim 1, Abe is directed to a laminated film for a dye-sensitized solar cell (abstract, paragraph [0001]) characterized by comprising:

- A polyester film (PET) (paragraph [0005]) and
- A transparent conductive layer (ITO) formed on one side thereof (paragraph [0005])

It is the Examiner's position that the laminated film of Abe et al. teaches the structural limitations of the instant claim and will therefore the transparent conductive layer will inherently have the specified surface tension (40 mN/m or greater). If it is not taken that the surface tension is an inherent property to the transparent conductive oxide layer of the laminate, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the surface tension to be at least 45 mN/m to ensure better adhesion between the layers of the laminate, as evidenced by Murschall (US 20010029274; paragraph [0005] and [0123]).

In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists (see MPEP § 2144.05 and *In re Wertheim*).

Regarding claim 2, It is the Examiner's position that the laminated film of Abe et al. teaches the structural limitations of the instant claim and will therefore the transparent conductive layer will inherently have the specified surface tension (65 mN/m

Art Unit: 1795

or greater). If it is not taken that the surface tension is an inherent property to the transparent conductive oxide layer of the laminate, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the surface tension to ensure better adhesion between the layers of the laminate, as evidenced by Murschall (US 20010029274; paragraph [0005] and [0123]).

In the case where the claimed ranges “overlap or lie inside ranges disclosed by the prior art” a prima facie case of obviousness exists (see MPEP § 2144.05 and *In re Wertheim*).

Regarding claim 3, Abe et al. teaches the polyester film being PET (paragraph [0005]) which is disclosed by Applicant in the Specification as a material to be used for the polyester film (pp 3, lines 12-16). Therefore, it is the Examiner's position that the PET film of Abe et al. will inherently have a light transmittance of no greater than 3% at a wavelength of 370 nm and a light transmittance of 70% or greater at 400 nm.

Regarding claims 4, Abe et al. teaches the polyester film being PET (paragraph [0005]) which is disclosed by Applicant in the Specification as a material to be used for the polyester film (pp 3, lines 12-16). Therefore, it is the Examiner's position that the polyester film of Abe et al. will inherently have an absolute value of no greater than 0.8% for the difference in the heat shrinkage rates in the lengthwise direction and widthwise direction of the film. If it is not taken that this property is inherent, then it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the heat shrinkage rates of the polyester film to maintain similar shrinkage in both directions (lengthwise and widthwise) as evidenced by Applicant's Specification

Art Unit: 1795

(pp 8, line 28 to pp 9, line 11) thereby having an absolute value no greater than 0.8% for the difference.

Further, the Examiner notes that the limitation of “upon treatment of 10 minutes at 200°C” is directed to a method step (a method of testing). Therefore, this limitation is not given patentable weight in the claim.

Regarding claim 9, Abe et al. teaches an electrode for a dye-sensitized solar cell electrode (abstract) comprising a laminated film for a dye-sensitized solar cell (PET and ITO; abstract and paragraph [0001]) and a porous semiconductor layer formed on the transparent conductive layer (abstract).

Regarding claim 10, Abe et al. teaches the porous semiconductor layer comprising titanium oxide (paragraph [0052]).

8. Claims 1-4 and 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abe et al. (JP 2002-050413, machine translation provided) in view of Murschall (US 20010029274).

As to claim 1, Abe is directed to a laminated film for a dye-sensitized solar cell (abstract, paragraph [0001]) characterized by comprising:

- A polyester film (PET) (paragraph [0005]) and
- A transparent conductive layer (ITO) formed on one side thereof (paragraph [0005])

Abe et al. is silent as to the transparent conductive layer having a surface tension of 40 mN/m or greater.

However, it is known in the laminate polyester art to utilize a surface treatment such as corona or flame treatment to improve the surface tension of a film (laminate) surface to be at least 45 mN/m as taught by Murschall (paragraph [0123]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to improve the surface tension of the transparent conductive layer of Abe to be at least 45 mN/m as taught by Murschall.

In the case where the claimed ranges “overlap or lie inside ranges disclosed by the prior art” a prima facie case of obviousness exists (see MPEP § 2144.05 and *In re Wertheim*).

Regarding claim 2, Abe is silent as to the surface tension of the transparent conductive layer being 65 mN/m or greater.

However, it is known in the laminate polyester art to utilize a surface treatment such as corona or flame treatment to improve the surface tension of a film (laminate) surface to be at least 45 mN/m as taught by Murschall (paragraph [0123]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to improve the surface tension of the transparent conductive layer of Abe to be at least 45 mN/m as taught by Murschall.

In the case where the claimed ranges “overlap or lie inside ranges disclosed by the prior art” a prima facie case of obviousness exists (see MPEP § 2144.05 and *In re Wertheim*).

Regarding claim 3, Abe et al. teaches the polyester film being PET (paragraph [0005]) which is disclosed by Applicant in the Specification as a material to be used for



Art Unit: 1795

the polyester film (pp 3, lines 12-16). Therefore, it is the Examiner's position that the PET film of Abe et al. will inherently have a light transmittance of no greater than 3% at a wavelength of 370 nm and a light transmittance of 70% or greater at 400 nm.

Regarding claims 4, modified Abe et al. teaches the polyester film being PET (paragraph [0005]) which is disclosed by Applicant in the Specification as a material to be used for the polyester film (pp 3, lines 12-16). Therefore, it is the Examiner's position that the polyester film of Abe et al. will inherently have an absolute value of no greater than 0.8% for the difference in the heat shrinkage rates in the lengthwise direction and widthwise direction of the film. If it is not taken that this property is inherent, then it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the heat shrinkage rates of the polyester film to maintain similar shrinkage in both directions (lengthwise and widthwise) as evidenced by Applicant's Specification (pp 8, line 28 to pp 9, line 11) thereby having an absolute value no greater than 0.8% for the difference.

Further, the Examiner notes that the limitation of "upon treatment of 10 minutes at 200°C" is directed to a method step (a method of testing). Therefore, this limitation is not given patentable weight in the claim.

Regarding claim 9, Abe et al. teaches an electrode for a dye-sensitized solar cell electrode (abstract) comprising a laminated film for a dye-sensitized solar cell (PET and ITO; abstract and paragraph [0001]) and a porous semiconductor layer formed on the transparent conductive layer (abstract).

Art Unit: 1795

Regarding claim 10, Abe et al. teaches the porous semiconductor layer comprising titanium oxide (paragraph [0052]).

9. Claims 1-5 and 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakamura (US 6291763) in view of Murschall (US 20010029274).

As to claim 1, Nakamura is directed to a laminated film for a dye-sensitized solar cell (abstract) characterized by comprising:

- A polyester film (PET) (column 6, lines 8-13) and
- A transparent conductive layer (ITO) formed on one side thereof (column 5, lines 57-63)

Nakamura is silent as to the transparent conductive layer having a surface tension of 40 mN/m or greater.

However, it is known in the laminate polyester art to utilize a surface treatment such as corona or flame treatment to improve the surface tension of a film (laminate) surface to be at least 45 mN/m as taught by Murschall (paragraph [0123]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to improve the surface tension of the transparent conductive layer of Abe to be at least 45 mN/m as taught by Murschall.

In the case where the claimed ranges “overlap or lie inside ranges disclosed by the prior art” a prima facie case of obviousness exists (see MPEP § 2144.05 and *In re Wertheim*).

Regarding claim 2, Nakamura is silent as to the surface tension of the transparent conductive layer being 65 mN/m or greater.

Art Unit: 1795

However, it is known in the laminate polyester art to utilize a surface treatment such as corona or flame treatment to improve the surface tension of a film (laminate) surface to be at least 45 mN/m as taught by Murschall (paragraph [0123]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to improve the surface tension of the transparent conductive layer of Abe to be at least 45 mN/m as taught by Murschall.

In the case where the claimed ranges “overlap or lie inside ranges disclosed by the prior art” a prima facie case of obviousness exists (see MPEP § 2144.05 and *In re Wertheim*).

Regarding claim 3, Nakamura teaches the polyester film being PET (column 6, lines 8-13), a material disclosed by Applicant as an appropriate polyester for the laminate (see Specification pp 3, lines 12-16). Therefore, it is the Examiner's position that the polyester film of Nakamura will have a light transmittance of no greater than 3% at a wavelength of 370 nm and a light transmittance of 70% or greater at 400 nm.

**Examiner Note:** Nakamura teaches that his film is "substantially transparent" meaning it has a transmission of preferably 70% or more at visible light (400 nm to 900 nm) (column 5, lines 52-57).

Regarding claim 4, modified Nakamura is silent as to the polyester film having an absolute value of no greater than 0.8% for the difference in the heat shrinkage rates in the lengthwise direction and the widthwise direction of the film.

However, as noted by Applicant's Specification (pp 8, line 28 to pp 9, line 11) the modifications of a film by a heat treatment step or a heat relaxation step to alter the heat shrinkage rates in the lengthwise and widthwise direction are well known in the art.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the heat shrinkage rates of modified Nakamura's film in the lengthwise and widthwise directions with a reasonable expectation of success by the methods disclosed in Applicant's Specification. Further, it would have been obvious to achieve a desired relationship between the two rates to ensure proper adhesion between the laminated layers and to prevent peeling.

The Examiner notes that the limitation of "upon treatment of 10 minutes at 200°C" is directed to a method step (a method of testing). Therefore, this limitation is not given patentable weight in the claim.

Regarding claim 5, modified Nakamura is silent as to the polyester film having a heat shrinkage of 0-0.5% in the lengthwise direction of the film.

However, as noted by Applicant's Specification (pp 8, line 28 to pp 9, line 11) the modifications of a film by a heat treatment step or a heat relaxation step to alter the heat shrinkage rates in the lengthwise and widthwise direction are well known in the art.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to try to modify the heat shrinkage in the lengthwise direction of the film of modified Nakamura as taught by Applicant's Specification to achieve a desired level of shrinkage.

The Examiner notes that “upon treatment for 10 minutes at 200°C” is directed to a method step (a method of testing). Therefore, this limitation is not given patentable weight in the claim.

Regarding claim 8, modified Nakamura teaches an anti-reflection layer on the side of the laminated film opposite the transparent conductive layer side (column 31, lines 46-50).

Regarding claims 9 and 10, modified Nakamura teaches an electrode for a dye-sensitized solar cell electrode comprising a laminated film for a dye-sensitized solar cell according to claim 1 (see full discussion of references above) and a porous semiconductor ( $\text{TiO}_2$ ) layer formed on its transparent conductive layer (ITO) (column 4, lines 61-67; column 5, lines 57-62; column 6, lines 34-35).

10. Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakamura (US 6291763) in view of Murschall (US 20010029274) as applied to claim 1 above, and further in view of Tamai et al. (US 20020037399).

Regarding claims 6 and 7, Applicant is directed above for a full discussion of Nakamura in view of Murschall as applied to claim 1. Modified Nakamura is silent as to the laminated film further comprising a readily adhesive layer with a thickness of 10-200 nm between the polyester film and the transparent conductive layer and as to a hard coat layer between the readily adhesive layer and the transparent conductive layer.

However, it is known in the laminated film art to utilize a readily adhesive layer (4) such as a resin (paragraph [0049]) as taught by Tamai to ensure proper and longstanding adhesion between two adjacent layers.

Further, Tamai teaches a hard coat layer (2/3) above the readily adhesive layer to help protect and prevent cracking (paragraph [0081]-[0082]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to utilize a readily adhesive layer such as a resin as taught by Tami between the polyester and transparent conductive films of modified Nakamura and a hard coat layer between the readily adhesive layer and the transparent conductive layer to ensure proper and longstanding adhesion between the two layers.

The references are silent as to the readily adhesive layer having a thickness of 10-200 nm. However, in *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984), the Federal Circuit held that, where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device. Further, it would have been obvious to one of ordinary skill in the art to modify the thickness of the layer to achieve the desired adhesion strength as evidenced by Tamai (paragraph [0086]).

***Contact/Correspondence Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shannon Gardner whose telephone number is (571)270-5270. The examiner can normally be reached on Monday to Thursday, 8am-5pm EST.

Art Unit: 1795

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexa Neckel can be reached on 571.272.1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/S. G./  
Examiner, Art Unit 1795

/Alexa D. Neckel/

Supervisory Patent Examiner, Art Unit 1795